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VETERINARY JOURNAL

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Editorials

THE PROFESSORSHIP OF ANIMAL PATHOLOGY AT CAMBRIDGE UNIVERSITY

In our advertisement pages will be found the announcement of the date of Election for the Chair of Animal Pathology in Cambridge University, with full particulars as to where and how to apply, and it is for those of our members who are suitably qualified to step forward and not allow such an opportunity to slip past without an effort to secure it for our profession. The competition is an open one, and the best man will be chosen; but it stands to reason that a scientist whose life's work has already been devoted to the problems of Animal Pathology is the most fitted for such a position. The skilled Veterinary Pathologist, with his expert knowledge of the different varieties of animal patients and their habits in health and disease, has the ideal foundation upon which to build up a future edifice of research, and it has been admitted publicly by one of the shrewdest human pathologists of the present day that when he gave the same sets of examination questions to the veterinary students and to the students of human pathology the replies given led him to openly state the opinion that the former had the better grounding. It is well within the mind of the present generation that Pathology, as a subject, was very indifferently taught in our colleges, and it is particularly to Sir John McFadyean that the great improvement in this respect is due. Scores

of veterinary students have received a grounding, during their respective college careers, second to none in any other branch of medicine, and it is incumbent upon some of them to now demonstrate their fitness for the high position which is so openly offered. We have been crying aloud for years for opportunities for Veterinary Research, and now that one of the oldest Universities in Great Britain has responded to our call it is to be hoped that the door will never be closed again ; but that one of our own profession will obtain and so occupy the position that the laboratories of Cambridge will soon have a large number of endowed veterinary research scholarships where veterinary graduates will be able to work side by side with those of Medicine and Agriculture. After all, by being amicably able to exchange specialist advice, and to do team work, in Pathology, Parasitology, Botany, Agricultural Hygiene, and Dietetics, the Professor of Animal Pathology (if a qualified veterinarian) will occupy a position which will make the opportunities at his command a veritable El Dorado.

AN INDIAN SERVICE VETERINARY ASSOCIATION

THE formation of a new Veterinary Association in India will be welcomed by the profession there, as in so vast a country organisation is even more necessary than in a comparatively small country like Great Britain. The recent Veterinary Conference, called together at the instigation of the Government of India, and the correspondence which had appeared previously in the columns of the VETERINARY JOURNAL concerning the unenviable position of the officials of the Indian Civil Veterinary Department, showed clearly how very much veterinary interests in India have been neglected, and it shows that something must be radically wrong when a lay paper of the importance of *The Times* emphatically states that " veterinary education, veterinary research, and veterinary legislation and administration in India are wholly unsatisfactory." We cordially endorse, too, the words of our contemporary that " it is urgently to be hoped that the Government of India will give immediate and serious consideration to the conclusions reached by the conference."

The formation and organisation of members in an association such as the one which has just been started cannot but be for the good of the profession, provided only that each member will do his bit to make it a real live body ; and the Secretary, Mr. R. F. Stirling, F.R.C.V.S., Nagpur, Central Provinces, will be pleased at all times to furnish information, especially to those of our new graduates who seek to take up Government and other service in India.

ANNUAL DINNERS

JUNE and July will see two dinners of importance in regard to the reunion of the members of our profession, and it is to be hoped that each will be well attended. On the 22nd of June the R.A.V.C. officers hold their annual gathering at the Hotel Cecil, and the opportunity is thus afforded to renew many old war comradeships; whilst on the 7th of July an attempt is to be made to revive the Annual Dinner of the Royal College of Veterinary Surgeons. At this it is hoped that there will be some distinguished guests and a large body of the profession to do them honour. Such gatherings make for good fellowship, and give opportunities for announcements and forecasts of importance to be made, and there is plenty of choice of subjects at the present time concerning the future of our profession on which learned speakers may digress to their hearts' content for the benefit and entertainment of those who are "listening in."

DEATH OF DR. SCHMIDT OF KOLDING

IT is with regret that we have to record the death of Dr. Schmidt, of Kolding, the originator of the present successful treatment for milk fever of cattle; just, too, as his name had been suspended in the Council Chamber of the Royal College of Veterinary Surgeons for the necessary period, after which he would have been brought forward as one whom the Royal College wished to do honour to by electing him an Honorary Associate. His unselfish publication of his discovery was the greatest boon of the century to clinical veterinary medicine. It saved the agricultural community of the world many millions of pounds, and the veterinarian many anxious moments.

BRITISH MEDICAL ASSOCIATION MEETING AT PORTSMOUTH (COMPARATIVE PATHOLOGY SECTION)

THE Secretaries of the Pathological Museum (Drs. Aston Key and Maybury, 14, Clarendon Road, Southsea) of the forthcoming Congress of the British Medical Association at Portsmouth in July next will be pleased to receive pathological specimens of comparative interest, and to make arrangements for their disposal in the Museum which is now being formed.

General Articles

PUSTULAR DERMATITIS

(*Impetiginous Eczema*)

By Lieut.-Col. H. WATKINS PITCHFORD, C.M.G., F.R.C.V.S., R.A.V.C.
Royal Army Veterinary School, Aldershot.

During the earlier months of the present year (1922) there was present amongst the horses of the Aldershot Command a condition of skin eruption which, though not of an extent such as to constitute a menace, was at the same time a sufficiently disabling condition to warrant both inquiry as to its nature and vigilance on the part of the executive veterinary officers of the Command in limiting its extension. Its existence in other Commands also was suspected.

That precautionary measures were expedient was apparent from the fact that the skin-condition in question has, in the past, been known to be the cause of rapid and extensive disablement either from a sudden enhancement of the pathogenic properties of the organism responsible for the disorder, or from inadequate precautionary measures owing to the apparently trivial and negligible character of its earlier phase; such as in the records by Goux of the French Veterinary Service, where the dismounting of an entire squadron of French Cavalry occurred within a fortnight owing to the non-recognition of the infectious nature of the disease. Recent evidences are not wanting in our own Service of the ease with which this trouble may assume formidable proportions, an instance being given in the report received from Major Leaning, R.A.V.C., who quotes the occurrence of this trouble during the retreat from the Somme in April 1918, where 45 per cent. of the horses of the 17th Lancers became rapidly infected.

The appearance of a skin disorder of this nature, therefore, amongst the horses of a Command justifies the taking of early precautionary measures in order to limit the possibility of extension, and it was in the hope of assisting measures of repression generally that the present inquiry was instituted, and of affording some guidance in dealing with possible future outbreaks.

Lines of Work Attempted.

The main facts sought to be elucidated were formally put down as the basis of an inquiry, and the endeavour was made to carry out the inquiry so as to clear up these deficiencies in our knowledge of the disorder. A copy of this work paper is put up. Most of its points have been looked into (Appendix I).

APPENDIX I

OBSERVATIONS ON THE DISEASE IMPETIGINOUS DERMATITIS (ACNE)

These observations are designed to clear up the deficiencies in our present knowledge concerning the origin and method of spread, bacteriology, therapy and prophylaxis of this disease, which as a disfiguring and often disabling disease is, in the aggregate, the cause of considerable loss of efficiency.

ORIGIN, METHOD OF SPREAD, DISTRIBUTION, ETC.

Incidence, seasonal? On class of animal, region.

Susceptibility of individual animal, man, other animals.

Exciting Causes.—Examine influence of rug, saddle blanket, pressure, brush, whisp, natural contact (mediate or immediate).

Inducing Causes.—Change of coat, condition, work, housing.

Distribution and Incidence.—In what parts of United Kingdom incidence appears, variation with unit, locality, etc.; examine cause (get returns for this); get evidence of persistence or recurrence.

Produce disease artifically by (*a*) fluid, (*b*) dried cultures, introducing same on to surface of skin, attended by friction, simple contact, simple contact plus grooming, saddlery contact.

BACTERIOLOGY.

Determine constancy of coccus as existing cause.

Classify same by observations on cultural characteristics, sugar fermentation, hæmolytic property, etc., vitality and best germicide.

Pathogenicity.—Observe simple contact of organism with (*a*) normal, (*b*) abraided surfaces. Determine skin reaction on guinea-pig, rabbit, rat, goat, etc., also toxin production.

Serology.—Antibody formation as shown by precipitin, agglutinin, and complement formation after (*a*) cutaneous infection, (*b*) subcutaneous injection of dead, attenuated living cultures.

THERAPHY AND PROPHYLAXIS.

If antibody formation marked, determine any immunity or refractory condition attending massive and slight skin infections with view to simple vaccination on convenient site. Also any protection attending use of appropriate vaccine.

Observe effect of introduction of immune serum in active stage.

SUMMARY AND RECOMMENDATIONS.

Photographs and charts wherever possible.

In order to collect precise details as to the incidence and nature of the affection in the various Home Commands, a test of twenty-two questions (Appendix II) was circulated to the Administrative Veterinary Officers of Commands for completion by the veterinary officers in their Commands. In this manner the evidence of some twenty veterinary officers has helped to constitute a useful survey of the disease such as has enabled me to attempt—more adequately than I could otherwise have done so—to analyse some of the more important features of its incidence and ætiology.

APPENDIX II

QUESTIONS

1. Is any history obtainable of the previous occurrence of this disease in the present unit or in any other unit occupying the same stables in the past ?
2. Have any of the animals affected at present been similarly affected previously ?
3. What class of animal is usually affected, and have any cases of the disease been observed in mules ?
4. Is condition or lack of condition considered a factor in the production of the disease ?
5. Do you consider the disorder contagious ?
6. Have cases been confined to any one stable, section, etc., or have they appeared scattered throughout the unit ?
7. Have any cases of a similar nature been observed among the men attending the affected animals ?
8. Are horse-rugs of the unit interchangeable, or are they strictly confined to individual animals ?
9. Has each horse its own grooming kit, or are details of same interchangeable ?
10. How often is the grooming kit disinfected ?
11. Has the condition in question been observed among horses with long coats, or is its incidence confined to the animal newly clipped ?
12. In cases occurring among clipped horses, what is the average length of time elapsing between date of clipping and first appearance of lesions ?
13. Has it been possible in any case to trace definitely the occasion or time when infection took place ?
14. Which areas of the animal's body are the most common seat of the lesions ?
15. Have lesions varied in type, extent or severity ?

16. Do animals exhibit pain at the site of lesion ?
17. In what percentage of cases are the lymphatic vessels involved ?
18. Has any systemic disturbance been observed ?
19. What is the average length of time affected animals are thrown out of work ?
20. Are whisps of straw used and is strapping of a vigorous nature employed during grooming operations ?
21. Does new hair grow rapidly on site of lesion, and have you observed any difference in colour between new hair and the old ?
22. What treatment have you found most beneficial ?

Clinical Evidence.

Views diverging from those of the majority are in some instances expressed in replies to these questions, but it has not been difficult on the whole to bring such evidence to a useful consensus, and to place these in support of the independent observations undertaken at the Royal Army Veterinary School.

One fact emerging from this evidence is the seasonal nature of the disorder, a point which seems to have escaped notice at the hands of previous scientific workers and writers.

Seasonal Influences.

Periods of normal susceptibility of the horse appear to correspond mainly—if not entirely—with the periods during which the animal's coat is in the process of shedding.

The Coat.

That such times correspond generally with the periods during which the horse is usually divested of its coat by clipping tends *a priori* to suggest that the removal of the hair, whether by artificial or by natural process, is the factor which—in the presence of the infection—determines the incidence. The evidence on this point of the protective influence of the coat, as secured from the various Commands, is fairly evenly divided, inclining perhaps on the whole to the conclusion that removal of the coat is a factor promoting infection. Experimental evidence obtained at the School tends to confirm the view that while the coat affords some measure of protection against invasion of the skin, such degree of protection is not great, the difference between the clipped and unclipped areas of skin after artificial infection being only slight as regards the degree of local reaction. In this respect the disorder differs considerably from other skin affections, such as the so-called Canadian ringworm, which was so prevalent during the late war; in this latter disease great protection was afforded by the intact coat.

Skin Changes During Change of Coat.

In placing these two somewhat similar skin affections in parallel for purpose of comparison, it is difficult to discover the reason underlying this varying degree of protection afforded by the coat, or—in other words—why the coat in one case affords considerable protection against the invasion of one parasitic organism and with another organism under seemingly parallel conditions fails to do so, for the skin itself denuded of its coat is, in its normal state, liable to infection by artificial implantation (rubbing in) of both organisms. Evidence, however, points to the fact that the skin of the horse during the period of the shedding of the coat is more liable to invasion, and that during this period any mechanical cause, such as the attrition of the harness or saddle, suffices in the presence of the specific organisms to break down the protection which the coat affords and to permit the lodgement of the specific organism of Pustular Dermatitis in the follicles of the skin. At such period, not only is the density of the coat reduced by the falling out of the hair and the mechanical protection it affords lessened, but examination of the skin itself during the time of the hair shedding will serve to show a great increase in its permeability. The young fine hair occupies the same follicle as the old hair of greater diameter, and with the falling of this latter the follicle tends to remain incompletely occluded until such time as the young and slender hair increases its sectional area by growth. During the time of incomplete occlusion considerable opportunity is afforded for the lodgement of foreign material, organisms, etc., and this is especially the case where the thick hair of the winter coat falls, leaving in its place the slender and immature hair of the on-coming summer coat. It is this period of coat change which corresponds to the greatest incidence of the disease in question, and with the "setting" of the coat and the complete filling and occlusion of these follicular orifices the greatest liability to the disease disappears.

While this appears the rationale underlying the infective mechanism, it is possible that contributory causes such as lowered skin resistance and individual susceptibilities, etc., may exist. Influences by pyogenic organisms—such as the one in question—are frequently found in other animals and man to attend states of lowered vitality, and it is accepted that the stamina and general condition of the horse suffers to some extent during the period corresponding to the change of his coat.

Individual Liabilities.

In man the individual liability to invasion by pyogenic organisms of a kindred nature is found to vary within considerable limits,

personal tendencies towards conditions of acne, furunculus, sycosis, etc., being marked. Such a state of idiosyncrasy or individual liability may well exist in the horse, just as a tendency is noted for the recurrence of pyogenic skin affections in the same dog. Evidence is not wanting as to the liability of the disease to recur in the horse, though—as will be recognised—it is difficult to trace such recurrences under the fluctuating conditions of environment and personnel which exist.

Factors of individual susceptibility, lowered resistance, etc., however, can hardly be other than minor and contributory ones, and the conditions for the production of the disorder in question appear to be—(*a*) the receptive state of the horse's skin; (*b*) a mechanical cause bringing about infection in the presence of (*c*) the organism causing the eruption.

CONDITIONS ESSENTIAL TO INFECTION.

Regarding this latter it is necessary to infer—to some degree at least—a specific pathogenic action on the part of the organism in question, otherwise—as a common pus-organism of universal distribution—the disease would be found to attack the horse under all conditions of stable management, whenever—each spring and autumn—the coat became naturally changed. As such is not the case, and as the condition in question appears only intermittently in a locality, and under stable conditions which remain constant, it becomes evident that as well as the altered coat condition an action, to some degree specific in nature, is exerted by the infecting micrococcus. Whether such organism is strictly specific (pathogenic), or merely a widely distributed non-pathogenic pus-organism acquiring pathogenic properties, seems immaterial to the text of this report or its findings. The question which is one more of academic interest will be found dealt with further in Appendix III. Even when both the above conditions (the presence of the organism and a falling coat) are conjoined, a third condition appears necessary for implantation of the organism within the deeper layers of the epidermis, and the causing of the disease-condition known as Impetiginous or Pustular Dermatitis.

APPENDIX III

THE ORGANISM, SEROLOGY AND VACCINE-THERAPHY, ETC., OF PUSTULAR DERMATITIS

The organism concerned in the production of the lesions dealt with in this text belong apparently to the ordinary and widely distributed type of pus-producing or pyogenic cocci. Amongst the cases coming directly under the notice of the School, organisms were isolated from the lesions present in twenty-three instances. Their character and situation were as follows:—

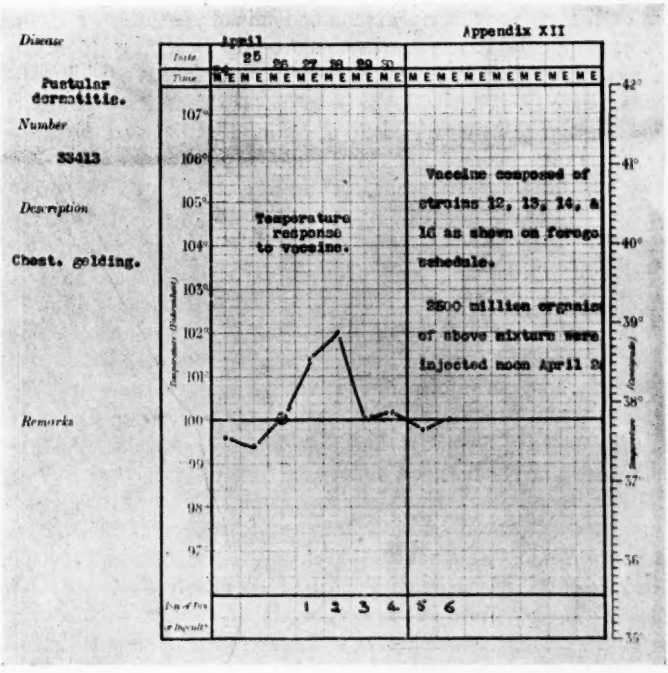
Date.	Strain No.	Variety of Organism.	Situation of Lesions.	Condition of Lesions.
Mar. 7	1B	Staphylococcus aureus	Near shoulder and flank	Acute, generalised
Mar. 15	2A	Staphylococcus albus	Off shoulder	Acute, localised
Mar. 15	3A	Staphylococcus albus	Collar, both flanks	Acute, fairly generalised
Mar. 16	4A	Staphylococcus albus	Collar, croup	Acute, localised
Mar. 24	5A	Staphylococcus albus	Both flanks	Acute, generalised
Mar. 24	5B	Staphylococcus aureus		
Mar. 24	6A	Staphylococcus albus	Near flank	Acute, localised
Mar. 24	6B	Staphylococcus aureus		
Mar. 24	6C	Staphylococcus citreus		
Mar. 24	7A	Staphylococcus albus	Near shoulder	Acute, localised
Mar. 24	8A	Staphylococcus albus	Both flanks	Acute, generalised
Mar. 24	8B	Staphylococcus aureus		
Mar. 24	9A	Staphylococcus albus	Off collar and shoulder	Acute, localised
Mar. 24	9B	Staphylococcus aureus		
Mar. 27	10A	Staphylococcus albus	Near shoulder	Acute, localised
Mar. 28	11A	Staphylococcus albus	Base of mane and shoulder on the near side	Acute, localised
April 5	12A	Staphylococcus albus	Near flank	Acute, localised
April 5	12B	Staphylococcus aureus		
April 5	13A	Staphylococcus albus	Near shoulder	Acute, localised
April 6	14A	Staphylococcus albus	Saddle area	Acute, confined to saddle area
April 19	15A	Staphylococcus albus	Near shoulder	Acute, localised
April 19	15B	Staphylococcus aureus		
April 21	16A	Staphylococcus albus	Saddle area	Acute, generalised

Examination of the details of the foregoing tabular statement will show that an organism corresponding in character to the *Staphylococcus albus* was present in pure strain in fifteen instances out of twenty-two, while the yellow *staphylococcus* was present together with the white variety in the eight remaining cases. All the strains isolated were gram-positive growing on all the usual media both aerobically and anaerobically without gas formation. Glucose, lactose, maltose, saccharose, levulose and galactose were reduced, and neutral-red broth was decolorised; but dextrin, salicin, inulin and glycerine remained unaffected. Endeavour therefore to discover specific differences by culture between the organism in question and other pyogenic organisms was negative.

The same want of success attended the endeavour to show the presence of antibodies in the circulation of animals frequently infected or injected with the causal organism. While it is probable that a more intensive hyper-immunisation would have led to the appearance of demonstrable antibodies in the system, no practical outcome would appear to attend such effort, inasmuch as the use in pyogenic infections of hyper-immune serum has long given place to the much more marked and more rapidly produced immunity attending the employment of

a vaccine made from the pyogenic organism itself. Absence of agglutinins and also of the deviating complement principle in all the bloods examined is devoid of significance in considering the question of immunity by a vaccine, for it is recognised that no constant relation exists between the extent of antibodies present in a serum and the degree of immunity possessed, e.g. the serum of an animal highly immune to such diseases as typhoid or cholera may at the same time be devoid of all protective and curative antibodies.

Negative serological findings, therefore, have no direct constant



bearing on the problem of prophylaxis or immunity production by vaccines. A direct physical response, however, follows the introduction of the bacterial bodies in question into the system of the horse, as shown in the attached chart, and there can be no doubt that—as in the case of the human being reaction to the injection of similar pyogenic organisms—the outcome of such reaction is an increase of the opsonin content of the blood leading to an increase of resistive power on the part of the horse.

(*To be continued.*)

SOLUBLE PREPARATIONS OF CODLIVER AND OTHER OILS IN TUBERCULOSIS

By Sir LEONARD ROGERS, M.D., F.R.C.P., F.R.C.S., F.R.S., I.M.S. (Ret.),
London.

A good many years ago, when in temporary charge of the Veterinary Bacteriological Laboratory at Mukhtesar, India, I learned something of infective diseases in animals, and realised the value of comparative medicine and pathology, and the importance of close co-operation between the medical and veterinary professions in relation to diseases attacking both man and animals, such as tuberculosis, and consequently I welcome the opportunity Professor Hobday has afforded me of bringing before the veterinary profession a brief account of my researches on a new line of treatment of this widespread scourge, in the hope of enlisting their help in testing its value and limitations.

Injections of Soluble Chaulmoogra Oil Preparations in Leprosy.—In 1921 I published (1) an account of my five years researches on the treatment of leprosy by injections of soluble preparations of chaulmoogra, codliver and soya bean oils, so need only mention here the main points established. Chaulmoogra oil had long been used orally in leprosy with little effect, except in very early cases, on account of its nauseating properties, while slightly better results had been obtained by Dr. Heiser in a few cases by means of a long series of painful intramuscular injections, which few patients would submit to, when at his own request I took up the question and set to work to find a soluble preparation of the active unsaturated fatty acids, chaulmoogric, hydnocarpic and gynocardic acids, and found that their sodium salts could be used for this purpose, although they proved but little advance by subcutaneous injection on the whole oil. So I next tested in animals the possibility of their intravenous injection, which proved safe and effective, and I then obtained febrile and local reactions, accompanied by rapid destruction of the very numerous acid-fast lepra bacilli in the human tissues, followed by steady absorption of the leprous nodules and restoration of the lost sensation: evidently due to antigens set free by the breaking up of the bacilli leading to active immunisation of the system, as proved by certain cases where a very prolonged febrile and reaction of a month or more in duration, sometimes of even a small intravenous dose of the drug, and occasionally followed by steady and eventually complete disappearance of all signs of the disease, including its causative bacterium, in the course of a year or so. A remarkable phenomenon, which cannot be explained by the power of these soluble chaulmoogra oil preparations to destroy acid-

fast bacilli in vitro, which was subsequently demonstrated by Walker and Sweeney.

Injections of Soluble Preparations of Codliver and Soya Bean Oils in Leprosy.—I next prepared an analogous substance from codliver oil, which I called sodium morrhuate, being the sodium salt of the separated unsaturated fatty acids of that oil, with the intention of trying it in tuberculosis, and found it was practically painless and unirritating by subcutaneous, intramuscular and intravenous injection, being thus more convenient than sodium gynocardate, which is much more irritating to the tissues and vessel walls, and I found sodium morrhuate was as effective in leprosy as the former preparation, as shown by tests in 300 cases in several leper asylums. This lead me to think that similar preparations of other oils with a large amount of unsaturated fatty acids might also be of value, and that the old theory, that the virtue of chaulmoogra oil in leprosy lay in the peculiar and unique chemical constitution of its unsaturated fatty acids in having a closed carbon ring, was incorrect; so I made a sodium soyate from soya bean oil, which cleared up and rendered bacteriologically free one typical case of nodular leprosy within six weeks, a far shorter period than I have ever seen before; while during the last year Dr. E. Muir, who has continued my investigations in the Calcutta School of Tropical Medicine, has added preparations of linseed and olive oil to the three I showed to be effective in leprosy, thus confirming my work, which opens up an immense field for research in the treatment of both leprosy and tuberculosis.

Sodium Morrhuate in Tuberculosis.—During my last two years in India I also tried sodium morrhuate in various forms of tuberculosis with the help of several other workers, and recorded promising results early in 1919 (2 and 3), and in the winter of 1920–21 I tested its effects in rabbits and guinea-pigs artificially infected with negative results, very large doses of tubercle bacilli being used on the advice of Dr. Stanley Griffith, although subsequently three American workers using smaller infective doses obtained distinctly beneficial results from this line of experimental work, and in 1922 (4) I recorded a brief summary of the results in surgical and pulmonary tuberculosis obtained up to then, and expressed the belief that beneficial effects are often obtained in surgical forms of the disease, but that in pulmonary tuberculosis good results are less frequent, while harm may follow too severe reactions, so that in phthisis the method required further trials by experts before it could be recommended for general use.

Ethyl Ester Chaulmoogrates in Pulmonary Tuberculosis.—Dean and Hollmann in Hawaii confirmed my work on sodium

gynocardate on leprosy, and introduced a useful modification by preparing an ethyl ester chaulmoograte, which can be injected intramuscularly with little trouble and greater convenience and rapidity than the intravenous use of the sodium salts, and their method, which was not altogether new, has proved of great practical importance in the treatment of large bodies of lepers; so in view of Walker and Sweeney's demonstration of the action in vitro on acid-fast bacilli of chaulmoogra oil products, which is not the case with morrhuates, I have recently got trials of ethyl ester chaulmoograte carried out in phthisis, but without much effect, so have been led to regard the morrhuates, and possibly also the soyates, as more worthy of further investigation.

Probable Mode of Action of the Preparations on Acid-Fast Bacilli of Leprosy and Tubercle.—I suggested that the above preparations probably acted in some way on the unsaturated fatty acids in the protective coating of acid-fast bacilli, and Dr. Shaw-Mackenzie has directed my attention to the possible action of the lipases, and has shown that sodium gynocardates, morrhuates and oleat all stimulate the lipolytic action of pancreatic extract on an olive oil emulsion. I have, therefore, recently estimated the hepatic lipases in the blood in both leprosy and tuberculosis before and after the injection of these different preparations, and although my observations are still comparatively few, I have found the lipases to be very low in untreated tubercular or nodular leprosy in particular, and to have been raised considerably after successful treatment, although still low in one case in which a severe reaction had just occurred, which might have used up the lipases in the blood, while it is well known that this ferment is low in active tuberculosis, but may increase in those doing well; and I have recently obtained a considerable rise in the blood lipase in some cases of surgical tuberculosis treated by hydnocarpates, morrhuates and soyates, which, if confirmed by further work, may explain the effective action in destroying the acid-fast bacilli of the new preparations I have introduced for the treatment of tuberculosis and leprosy; so they are very encouraging, and indicate the necessity of further trials, in which the veterinary profession might very well play an important rôle. The following details regarding the practical use of the treatment will suffice to enable such trials to be made, cases such as tubercular mastitis in cattle and tuberculosis of dogs and cats, especially such as present visible lesions allowing of reactions and progress to be carefully watched, being especially suitable for such tests.

Preparations and Dosage.—There are two classes of prepara-

tions, the ethyl esters and the sodium salts or soaps, the former being more convenient for subcutaneous or intramuscular injection in the case of the chaulmoogrates only, while the morrhuates and soyates are equally convenient by those methods, and all three are suitable for intravenous use, so that sodium morrhuate, and perhaps sodium soyate—more experience being necessary in the case of the last named—are likely to prove most convenient for veterinary use. The ethyl esters are used pure after sterilisation by boiling before use on each occasion, or by the addition of 2 per cent. iodine, which is also of value in tuberculosis. The sodium morrhuate and soyate are each used in 3 per cent. solution in sterile water, to which ½ per cent. carbolic acid is added to sterilise them, the solutions being conveniently kept in rubber capped bottles, from which the required dose can be taken up in a sterile syringe by puncturing the cap, as with vaccines.

Doses.—The ethyl ester hydnocarpate and ethyl ester morrhuate can be injected intramuscularly in doses beginning with 0·1 c.c., and increased at each dose by the same amount up to 1 or 2 c.c.; and sodium morrhuate in a 3 per cent. solution, beginning with ½ c.c., and increasing by the same amount at each dose up to 5 or more c.c., as long as no marked reaction occurs, in which event a week should be allowed to elapse after the reaction has ceased, and the next dose reduced by ½ c.c., to be increased again as before as long as no febrile reaction occurs.

Reactions.—If there is a rise of more than a degree or so in the temperature, or swelling of tubercular glands or other local affection, or increased discharge from a tubercular sinus, this should be regarded as a reaction indicating a reduction of the next dose. Such reactions are commonly followed by improvement, and mild reactions are desirable. The treatment may have to be continued for several months to get any material effect, gain of weight being a frequent and favourable sign.

Lastly, the cost of the preparations is of importance, the ethyl esters being supplied at a few shillings for bottles of 50 or 100 c.c., while sodium morrhuate can be obtained at 6s. an ounce, which will make up nearly 1,000 c.c., or the 3 per cent. solution, or with an average dose of about 2 c.c., about 500 doses, which makes it a very cheap preparation if purchased in the powder form and the solution made up by the practitioner, and consequently well suited for veterinary work. The agents in England are Evans Sons, Lescher & Webb, 60, Bartholomew Close, London, E.C. 1, who can also supply the 3 per cent. carbolised solutions in sterile rubber-capped bottles ready for use, although the expense in that form is considerably

greater. I trust that the information contained in this note will enable any of the new methods to be fully tested in tubercular animals requiring treatment, and I shall be greatly obliged to any practitioners who will be kind enough to let me know their results whether they are favourable or otherwise.

REFERENCES.—(1) *Practitioner*, August 1921, p. 77 (with references to earlier work). (2) *British Medical Journal*, 1919, i, p. 147. (3) *Indian Journal of Medical Research*, 1919, p. 236. (4) *The British Journal of Tuberculosis*, 1922.

Clinical Articles

A WAR LEGACY

BY CAPTAIN GWYN LLOYD, ROYAL ARMY VETERINARY CORPS, *Weedon*.

A BAY mare thirteen years old belonging to the Equitation School, Weedon, had been suffering since November 1921 from a recurring abscess on the near hind leg, half-way between the angle of the croup and the point of the hock, between the semitendinosus muscle and the posterior division of the biceps femoris muscle on a line drawn posteriorly from the stifle joint.

The mare had been under treatment intermittently for the past seventeen months. The affected part began to swell, burst, and discharged for some days, and then healed up on the outside.

Exploration of the abscess cavity under chloroform was made on two occasions, revealing nothing but a little necrotic tissue.

For some months the abscess appeared to have healed completely. At the beginning of this year the condition recurred. On April 22, 1923, another attempt was made to find the focus of the trouble.

The mare was cast and chloroformed. An incision 7 inches in length was made in the skin, following the line of division between the semitendinosus and posterior division of the biceps femoris.

A quantity of pus was evacuated. The incision was then widened with the hand and the interior of the wound explored. Lodged between these two muscles, about 5 inches in depth from the surface, was found a small piece of shell splinter about the size of a sixpence and about $\frac{1}{4}$ inch thick.

The interior of the abscess was curetted and a dressing of eupad contained in a fold of thin cyanide gauze was packed into the cavity, and a few supporting sutures inserted through the lips of the wound to keep the pad in position.

This pad was kept in for two days and then removed with the stitches.

Little or no discharge came away ; the wound was then dressed with zinc ointment daily, and recovery was uneventful.

VENTRAL HERNIA

By W. GARDNER, M.R.C.V.S.,
Maybole.

Subject.—A nine years old pedigree Clydesdale mare.

Previous History.—She had been in the possession of the owner five years, and had never had a day's illness, nor met with any accident. She was kept for general agricultural purposes and was regularly worked on the farm. Two years ago she had her first foal, which was born without assistance. Nothing was seen amiss with the mare until the night before I was called to her. She was then at the grass, three days " past " her time, and the foreman noticed that she was badly swollen along the belly and very much " slippit " behind. It is said she was all right earlier in the day. He had her taken indoors and placed in a loose-box.

Next morning, when called to her, I found her very dull, pulse quickened, temperature 102·6°. Had refused all food since coming indoors, breathing was slightly accelerated, and she showed slight signs of abdominal pain at intervals. She presented sac of wide dimensions evenly diffused along floor of the abdomen, stretching from the last rib to the inguinal canal. This was to the depth of 4 inches; very painful and doughy on palpation.

Diagnosis.—Ventral hernia, though no hernial opening was to be discerned. Rectal examination did not help me in diagnosis, but revealed a living foal.

Treatment.—Consisted of mild antispasmodic draught in half-pint of Ol. lini. To be repeated in two hours if necessary. I applied a comfortable broad compress, and ordered that she be allowed oatmeal gruel only. I asked the owner to advise me at once when labour began.

Next morning. Mare still dull, pulse 64, temperature 102·4°. Pains had never been any more acute ; bowels moved repeatedly during the night. She had taken some gruel and had lain for hours mostly on the abdomen. When the compress was removed, the swelling was found to be more painful, deeper and wider, but no hernial opening could be felt. Mare walks slowly, and with a marked appearance of stiffness.

Prognosis.—Unfavourable. Continued use of compress and liquid food only, and left draught for relieving pain if necessary.

Third Morning. Mare dull, pulse 72, temperature 102·6°. I was informed that mare had lain in the same attitude during the whole night and occasionally showed signs of pain. The sac was much larger, and the subject now had the appearance presented by an old "broken-bellied, blackfaced ewe." The swelling readily pits on pressure, and is very painful towards the linea alba. Treatment as before continued. Her general appearance indicated the early onset of labour.

Fourth morning. Mare much the same, pulse 76, temperature 102°. She had lain more, but pain had been more insistent. The swelling was more pendulous, but no firmer in consistence. Patient seemed weaker on her legs; very stiff behind; disinclined to move. I now began to fear the mare might succumb before the birth of the fœtus.

At 3 p.m. I was again called to her as labour had begun. On arrival I found presentation normal, but mare very weak, and in a short time, with plenty of assistance, a comparatively easy delivery was effected of a living colt foal, of good size and strength. The placental membranes came away with the foal.

Mare remained lying and very restless after delivery; was given diffusible stimulants and opiates, and the compress was kept properly adjusted. In two hours she was seized with violent abdominal pains, kept turning head round to flanks, and became bathed in perspiration. Post-partum pains very marked. The sac was somewhat flabbier now and bore traces of bed-sores and some bruising from hind hoofs. Hot blankets and the administration of hypnotics gave no relief, and mare died in six hours after foaling.

Post-mortem.—Showed the outer covering of the sac to consist of skin and panniculus carnosa. There was revealed a hernial opening in the middle line of the abdomen 15 inches by 8 inches.

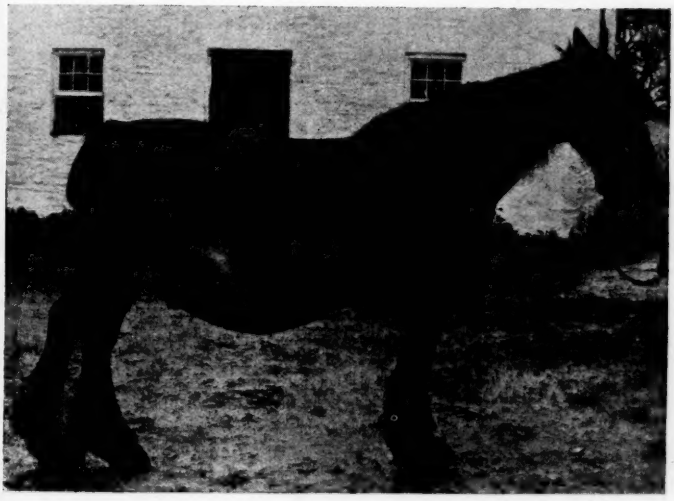
The contents of the sac consisted of small bowel and omentum, part of which had become strangulated, and there was evidence of extensive peritonitis. The straight, oblique and transverse abdominal muscles were all more or less torn. All other organs were apparently healthy, excepting the heart, which was hypertrophied.

This case may prove interesting to your readers, being a somewhat rare type of hernia, and from the fact that there was a lack of direct evidence as to the causal factor, as the subject never sustained any known external injury, nor was excessive muscular contraction apparent during her former pregnancy and delivery.

I offer the opinion that some congenital fissure or weakness in the

abdominal walls was the predisposing cause, thereafter aggravated by the heavy state of pregnancy in this gestation. I am of opinion that strangulation of small bowel did not occur till after the act of foaling, as no adhesions between small bowel and the abdominal muscles were present, nor was there any formation or connective tissue in the hernial sac.

The photograph was taken within thirty-six hours of the appearance of the swelling, which, as already stated, increased in size each day until the act of foaling commenced.



I regret that owing to atmospheric conditions and other exigencies I was unable to make later exposures on the subject before death, as I feel sure they would have added greater interest to this record than the enclosed, which, however, I consider I was fortunate in securing under the circumstances.

I should be pleased to hear the views of some of our leading practitioners who have had experience with similar cases of this kind.

Finally, I maintain that conditions such as were to be faced in this case in practice simply hold up to ridicule the principles laid down in theory as to palliative or curative treatment.

THE INTRAVENOUS INJECTION OF A SOLUTION OF FORMALDEHYDE IN PURPURA HÆMORRHAGICA IN HORSES

By JAMES McCUNN, M.R.C.V.S.,
West Ham, London, E.

A SAFE rule in medicine is that the more remedies that are advocated for any disease the less likely is any one to be a specific. The beneficial results which I have seen in animals after intravenous treatment with formaldehyde solution make me think that it is my duty to record it in order that others will try it and record results. I do not claim originality, and I think the originator of the treatment was Professor Imrie, Glasgow Veterinary College.

The apparatus necessary consists of an intravenous needle with adaptor, some rubber tubing with a glass window, and a funnel.

The adaptor is a nozzle which is fitted into the end of the tube, so that the needle may be inserted into the vein and the rest of the apparatus attached later.

The site of injection is the jugular vein, which may be raised sufficiently for the safe insertion of the needle by thumb pressure. The solution of formaldehyde used is the 40 per cent., and the strength of solution injected as an initial dose is ʒi of this in ℥x of boiled water. The solution is best given at blood heat, but this is a point of minor importance, as I have on several occasions given injections with cold fluid. There is no danger of any complications at site of injection if the following procedure is carried out :—

(1) The site of injection should be thoroughly cleaned and treated with antiseptics as in any operation.

(2) Solution and apparatus must be sterilised by boiling instruments and the water used.

(3) Vein raised, needle inserted, and a good flow of blood seen. This shows the vein to be entered properly.

(4) Before extracting the needle, raise the vein and get a good flow of blood through the needle.

The latter point is most important as it washes the needle, so that the fluid, which remains in it and is sucked into the tissues when being extracted, is blood and causes no harm.

The fluid is poured into the funnel and allowed to gravitate into the vein. The initial dose of formaldehyde I place at ʒi, but I have known ʒiv to be injected at one time with no ill effects. I may say that this happened due to a mistake on part of an assistant. If one injection is not sufficient there is no harm in repeating it, and in

my cases I have never needed to give more than three injections on succeeding days.

My first experiment was a most fortunate one, as it took me some time to find a horse on which I could try unorthodox treatment. In this case the animal was affected in his head, body and legs. I injected ℥x of the solution by means of a 5 c.c. syringe, and

Description.	Parts Affected.	Dose.	Number of Times Given.	Result.
Roan Gelding, Cart-horse.	Head, Body, Legs, Petechiæ.	℥x solution	2 on successive days.	Recovery. Swellings gone in four hours after second injection.
Chestnut Gelding, Cart-horse.	Head, Body, Legs, Petechiæ.	℥x solution	1	Case in which swellings were seen to go. The horse had been unable to eat. Swellings seen to go from head, and horse began to eat. Recovery complete in two days.
Chestnut Gelding, Cart-horse.	Head, Body, Legs, Petechiæ, also Septic Pneumonia.	℥x	1	Died nine days after. Swellings had gone in four days. Post-mortem, Septic pneumonia.
Bay Gelding, Cart-horse.	Head, Forelegs, Petechiæ.	℥x	1	Recovery. Swellings gone in one day.
Dark Bay Gelding, Cart-horse.	Head, Body, Legs, Petechiæ.	℥x	3 on successive days.	Recovery. Swellings gone two days after last injection.
Black Gelding.	Head, Body, Legs, Petechiæ.	℥x	2 on successive days.	Recovery. Swellings gone three days after second injection.

it took me over half an hour ; but before I had finished the swellings in the head had begun to go, much to the owner's and my own surprise. This horse made an uninterrupted recovery, and made me resolve to try again, but with a more suitable instrument. My other cases

have not been quite so dramatic, but with one exception have been successful. I have not a record of all horses treated, as unfortunately most of them were contract ones where no record was kept. I attach a list of six, however, one of them being my fatal case. It will be seen that all the horses are cart-horses. I have never had the opportunity of trying treatment on lighter horses.

ŒSOPHAGOTOMY IN A COW

By J. G. HOBAN, M.R.C.V.S.,
Whitchurch.

I was called to attend a case of choking, and as I was out my assistant went. He found an aged poor shorthorn cow very tympanitic, and immediately punctured the rumen. Efforts to move the obstruction upwards failed, as did the use of the probang.

On my arrival I found the patient easy, but the obstruction could still be felt about half-way down the neck. It was decided to do œsophagotomy, and all available light (two stable lanterns!) were procured, and the operation proceeded with, and a withered small turnip removed from the gullet through the incision. The operation took some time, and was not done with "one bold stroke of the knife."

The œsophagus was stitched with catgut and the skin drawn together. All food was withheld for twenty-four hours, and then only mashes given for some days. The wound was quite healed in three weeks, but there is a slight difficulty in swallowing, and no doubt there is stricture as a result of the operation.

AN EXTRAORDINARY EVERSION OF THE UTERUS IN A COW

By J. G. HOBAN, M.R.C.V.S.,
Whitchurch.

I was asked by a client on December 30, 1922, to remove the cleansing from a cow calved three days previously. The cow continued to strain for some hours later, and the owner, feeling uneasy, asked me to see her again. I did so, but could find nothing abnormal, and a chloral drench was given and the animal settled down. On meeting the owner some days later he informed me she still strained at times, and asked me when near his place to call. I did so in two days, and beyond a certain amount of "flabbiness" on the left side of the vagina could find nothing abnormal. The owner told me that

part of " the passage " was prominent when the cow lay down. I heard nothing more of the case until Sunday, February 3rd, when I got an urgent summons as the cow's " calf-bed " was down.

On arrival I found the uterus everted as well as about 6 inches of the posterior bowel. The floor of the womb was torn along its entire length, and through this rupture more bowel protruded. There was profuse hæmorrhage also—in fact the animal wallowed in its own blood and organs. Needless to say, no attempt at returning the viscera was made, and the animal was immediately slaughtered.

No reason for the straining could be found at first, and that the uterus should evert at such a long time after calving made the case doubly interesting.

A NOTE ON THE TREATMENT OF FOLLICULAR MANGE

By J. H. MASON, M.R.C.V.S.,
Glasgow.

Subject History.—Bull bitch, about fifteen months old. Well bred. Showed signs of skin trouble about a month previous to my seeing it. The lesions had slowly but surely spread.

Symptoms and Treatment.—The greater part of the head, the fore-legs in the knee region, parts of the hind-legs, and small areas, scattered over the body, were without hair, red, " sore " looking, spongy, and covered with a hæmorrhagic semi-purulent exudate. Suspecting follicular mange, I made a scraping, and discovered the parasite, without much trouble. The disease was so far advanced that destruction was advised, but I harkened to the advice of others present to give the animal the benefit of the doubt. The doubt, I may say, was very big. To better see the extent of the lesions, the animal was clipped all over. The extent was much greater than could be observed while the hair was on. The skin in the head region, and especially the loose skin beneath the lower jaw, was soft, juicy, and of a worm-eaten appearance. On pressure, a hæmorrhagic pus exuded. The skin emitted a strong odour, which might be compared to a mixture of what is commonly termed " doggy " and that got from a foul smelling wound.

Believing that a large percentage of the trouble was due to secondary invaders, I prescribed an autogenous vaccine, the organisms present being staphylococci. I made it as strong as possible, and gave 0·5 c.c. as soon as ready, and 1 c.c. every fourth day. Externally, I applied " Iodine Petrogen," 5 per cent., a proprietary preparation, put up by Wyeth, of Philadelphia. This is a non-irritating, stainless iodine preparation, which is absorbed through

XUM

the unbroken skin. So that iodism would not be set up, I treated half the head one day, and the other half two days later, and so on until all the body had been covered. A very little of the mixture goes a long way, and it must be rubbed in until the skin is dry. This takes about fifteen to twenty minutes. After about twelve days of the combined iodine and vaccine treatment, the head was much drier, and it was only after some pressure upon the skin that any discharge came away. As the animal showed this improvement and as the treatment was more in the nature of an experiment, I continued for another fortnight. In all, the bitch received six injections of vaccine, the last two being in doses of 1·5 c.c. At this stage, about four weeks after the commencement of treatment, the animal began to lose flesh rapidly, although her appetite was good and on some days prodigious. The passage of another week saw her very thin and weak, so much so that she stumbled whilst walking. The lesions, and especially those of the head, were still doing well.

I now felt that if the animal did not pull up I should lose her, and in view of the fact that the skin was doing so well, made every effort to get flesh on her bones. This was of no avail, for one morning, about six weeks after admittance, she was found dead.

It sounds stupid, but I feel sure that, if she had not died, I should have cured her. The cure would no doubt have taken months, but as it was conducted on experimental lines, this would not have mattered. The case was, at the outset, one which no practitioner would tackle with a view to making money, but given a comparatively mild case, I think that the Iodine Petrogen, plus the vaccine, the latter at the discretion of the veterinary attendant, would effect a cure.

The important point about the Iodine Petrogen is that it must be thoroughly rubbed in, and too large an area must not be tackled at once, or iodism will result.

RUPTURE OF THE DIAPHRAGM IN A DOG

By Major W. N. WRIGHT, M.R.C.V.S.,
Torquay.

A FOX TERRIER dog about twelve months old was brought to me on April 2nd. Mucous membranes very anæmic and laboured breathing. Temperature normal, heart-beat and pulse almost imperceptible. Stimulants were given him, but he died within half an hour of arrival. Post-mortem examination revealed the stomach enormously dilated with flatulence and about 1 foot of the intestines in the chest cavity,

which had got there through a hole about 1 inch in diameter through the muscular portion of the diaphragm. The heart was pushed to the right side of the chest and the lungs were very small.

History.—On March 17th (fifteen days prior to death) this dog had got in front of a motor car which knocked him down and passed over him; none of the wheels were said to have touched him. Directly afterwards he got up and walked into the hedge, but only seemed dazed. He was carried home and kept quiet for a few days. No professional advice was engaged, as he only seemed dull and could not jump down from a chair. He seemed to get much better, and on the 25th (eight days afterwards) went for a walk with his owner for three miles, and only seemed a little tired afterwards. He showed no symptoms of any kind until the morning of the 2nd instant, the day he was brought to my infirmary.

I can only think that the enormous flatulence of the stomach occurred on the day of his death and that this prevented his heart from working normally.

Abstracts of Current Literature

Kung, W.—Purulent Inflammation of the Spleen in Cattle.—*Schwerzer Archiv f. Talkunde*, October, 1922.

THE author states that purulent inflammation of the spleen may occur in different forms.

1. As latent inflammation. This form generally runs without clinical symptoms, but may suddenly develop into an alarming peritonitis, leading to death in a few hours.

2. As purulent disease of the spleen, with emaciation, without symptoms leading to a recognition of the disease.

3. As ichorous inflammation of the spleen. This form is probably diagnosable. The symptoms are moderate fever (40-41 C.), increased pulse, 80-100, tenderness on pressure over the belly wall, marked paleness of the mucous membrane and of the udder; eventually metastatic arthritis (acute serous synovitis of the tarsi). Diagnosis is rather difficult and can only be made through differentiation. In traumatic inflammation of the spleen, metastasis by the blood stream may occur, leading to infection of other organs.

Moussu, R.—Inflammation of the Testicles and Vaginalis in the Horse as a Complication of Colic.—*Recueil de Médecine Vétérinaire.*

MOUSSU reports four cases in which great tumefaction of the

testicles and vaginalis occurred in entire horses, after they had suffered a day or two previously from attacks of colic. All the horses were tested for glanders, and it was barred out. M. believes that during an attack of colic the more or less injured intestine allows microbean agents to arise which pass into the peritoneal cavity. This peritoneal infection ordinarily passes unperceived, clinically at any rate, for the researches of Charrin and G. Moussu, confirmed by those of Launois, show that the defence of the peritoneum is assured by the epiploon which intervenes by agglutinating and agglomerating the microbean agents by coagulation of the lymph. But it is otherwise for microbes which have been able to penetrate into the vaginalis ; not only are they sheltered from the defensive action of the epiploon but they find themselves in a closed cavity where they multiply, increase their virulence, and cause inflammation of the vaginalis. Period of incubation between colic and orchitis and vaginalitis is short—4, 5, or 6 days. Prognosis is grave. One horse that recovered almost spontaneously never had a temperature much above 101°.

Castration appears to be the choice in treatment, but it need not be hastily performed, and is not indicated in cases where temperature remains below 102°. Warm lotions, warm damp dressings in a suspensory bandage, are indicated in cases treated where an attempt is made to preserve the testicles and their function.

Rennie, M. D.—Acariasis of Bees.—*Bulletin of Institute of Internat. Agric.*, Rome.

THIS affection, called " Isle of Wight Disease," is different from the malady caused by *Nosema apis*, and is due to an acarus of the species *Tarsonemus*, which it is proposed to call *Tarsonemus Woodi*. Symptoms of infection are as follows : inactivity of the bees, dislocation of the posterior alæ and distension of the abdomen ; the flight-board as well as the honey-combs are soiled with excrement having the consistency of mastic ; in grave cases the bees crawl on the ground in thousands, and get together in clusters. Infestation occurs by the spiracles, whence the acari spread into the thoracic portion of the trachean system, causing sometimes by their quantity partial or complete obstruction of the trachea, which leads to immediate death, or to loss of power of flight. The parasite is rather plentiful in Great Britain. Out of 140 hives considered healthy by their owners, 50 were infected. The eggs and young bees were always exempt.

Rennie suggests that a change of name from Isle of Wight Disease to " Acarine Disease," or " Acariasis," is desirable.

XUM

Chapron.— Case of Probable Double Neuralgia of the Radial Nerve in the Horse.—*Recueil de Médecine Vétérinaire.*

A HORSE, about 15 years old, was brought to C. for examination and advice as it was very lame since the previous day. Movement of the near fore leg was very painful ; during the walk the shoe was put flat enough on the ground but pain was very manifest when weight was put on, and this phase was shortened as much as possible by the subject. Lameness was so great that an examination of the walk could only be made for a very short distance. No abduction. Foot pointed. Careful examination showed nothing abnormal in foot, tendons or articulations ; nothing wrong noticeable with the muscles and explorable parts of the bone. But at the back of the radius there was a slight œdema much more easily discoverable by touch than by sight, and pressure in this region gave rise to very marked sensibility. One easily located this pain and found that neither the bones nor muscles were the seat of it. It was exactly in the tract of the vasculo-nervous fascia, quite close to the place where neurotomy is performed, and it could be located for about three or four centimetres.

With such a plain localisation, it could only be a lesion of nerves, vessels or aponeurosis. I do not consider it was a lesion of the aponeurosis, as to my knowledge none has ever been announced. I do not consider it was due to vascular trouble, as nothing could be discovered abnormal in the region served by the blood vessels. We are very probably in the presence of a radial affection. We are ignorant of its origin, but we can affirm that there is no trammatism and that the pain has come on suddenly in cold, damp weather.

A vesicant was applied. At the end of 48 hours there was no change. In 4 days lameness began to diminish. At the end of a week the horse was put to work and went quite sound. Five days after a quite similar lameness occurred in the opposite leg. Examination showed exactly the same symptoms as previously with œdema and hyperesthesia at the same place. I adopted the like treatment and lameness disappeared in a week.

Remarks.—Clinical examination pointed to a nerve trunk as a cause of the lesion. What was its nature ? I do not think it was a neuritis, for at no time was there any symptom of paralysis. The rapid evolution of the complaint was against this hypothesis : equally it was quite improbable that it was a nerve tumour. By exclusion we are led to the conclusion that it was neuralgia of the radial nerve. We know that these paroxysms or continued pains are situated on the tract of a peripheral nerve and can have a radical origin, and that even so pain can be evinced by pressure on a subjacent trunk in the area where the nerves are superficial. I do not believe in this case that

there was a radical origin. The presence of œdema with a territory corresponding to that of the sensibility implied a lesion of the painful zone. In man one finds nervous troubles of the radial, having their situation at the osseous notch of the humeral torsion. In the horse, a kind of incomplete tunnel is realised by the antibrachial aponeurosis and the radius. In the case here mentioned there may have been gripping of the trunk by this sheath, completed by the fibro-osseous tunnel ; in any case this hypothesis has nothing illogical about it.

The Treatment of Foot-and-Mouth Disease.—*Schweizer Archiv für Tierheilkunde.*

In the course of the present year Professors Panisset, Carré, Vallée and Roux in the Academy of Sciences, as well as in the Society of Practical Veterinary Medicine of Paris, have all discussed their experiences in the control and treatment of foot-and-mouth disease. Especially noteworthy are the communications on the experiences with serotherapy. Owing to the great variability of the aphthus virus, immunity given by one stock of serum to experimental animals was not conferred when another stock of serum was used. It would seem therefore that a polyvalent serum gives the only chance of conferring immunity, and the obtaining of such an innoculating agent is very different in practice.

Treatment by drugs has been more hopeful. At the end of last year and the beginning of this M. Rousseau, district veterinary surgeon of Rheims, began to use the S.M. solution so successfully employed in war surgery. The solution first made by Dr. Louis Mencière, of Rheims, consists of :—

Guiacol	10 parts
Acid benzoic	2 parts
Alcohol	8 parts
Distilled water	1,000 parts

Results have been very favourable, and the use of the solution has been extended over a wide area. It is used in intravenous and subcutaneous doses of 1 to 2 grammes per kilogramme of the body weight. Average quantity for one injection is 200–800 grammes up to a maximum of 1 litre. The dose may be repeated without danger in twenty-four to forty-eight hours. As a rule one injection suffices. It is little use as a preventative, but much more an energetic, specific, curative means, which gains credit in every direction. It has been used by us in outbreaks in Berneroberland and the Canton of Nidwald; 800 grammes of the solution was injected intravenously and sub-

cutaneously. The greatest possible cleanliness must be exercised about the operation. The treatment costs about 2 francs a litre, whereas serum treatment would probably cost from 80 to 100 francs for a like quantity. (Owing to the difficulty of dissolving benzoic acid in water, it is recommended that it be dissolved in the alcohol and this solution poured into the water.)

Reviews

Encyclopædia of Veterinary Medicine, Surgery and Obstetrics.—Edited by GEORGE H. WOOLDRIDGE, F.R.C.V.S., M.R.I.A. Vol. I, pp. 548 + xxiii; 148 figures in text. Vol II, pp. 1106 + xxx; 358 figures in text. London: H. Frowde and Hodder & Stoughton. £6 6s. net.

This work has been compiled by Professor Wooldridge, with the help of several collaborators, and is an excellent production covering the fields of Veterinary Medicine, Surgery and Obstetrics in a broad, up-to-date and succinct manner. It fulfils the description of a good encyclopædia, as " a comprehensive summary of knowledge," and as indicating the wide range of the matter traversed, it may be stated that Vol. I covers fifty-three contagious diseases, thirteen diseases due to protozoan parasites, fourteen sections on local diseases, together with articles on snake-bite, poisons, and the principles of feeding and watering. It concludes with a classified list of worms, table of doses and an addendum on *Grass Disease*. Vol. II, edited with the aid of Professor Macqueen, contains fifty articles, compassing surgery and obstetrics, and each volume has a very copious index. The books should make a strong appeal to veterinary students, especially as several examiners of the Royal College of Veterinary Surgeons contribute articles to their pages. The figures in the text are helpful, and the spacing of the various articles has been done with discernment. Many diseases met with in foreign countries and the colonies are dealt with, and in this connection the volumes will be useful to overseas men.

An article on *dysentery in lambs* might have been usefully included in Vol. I, and we are not carried much further as regards our knowledge of distemper and canine typhus. From the practitioner's point of view, we think the lines on *the tuberculin test* would have been made more valuable had they been more informative. The use of discs is not mentioned in discussing the ophthalmic test. Regarding *spasm of the diaphragm*, although the author states it is seen most frequently in the horse and dog, we are inclined to put the pig first, as in this animal the phenomenon of " thumps " is well known to pig-owners, even if the cause is not always recognised.

Professor Wooldridge and his collaborators have done good service in producing this work. It is written in plain language, is up to date in its information and comprehensive in its scope, and the publishers and the printers have carried out their part well.

Ueber Kryptorchiden und ihre Kastration mit besonderem Hinblick auf das Pferd. By F. WINTER, V.S., Copenhagen. Pp. 47 ; 7 figures in the text. Richard Schoetz, Wilhelmstrasse 10, Berlin. 1923. 1s. net.

This is a well-written pamphlet, covering the whole field of cryptorchid castration. It contains seventeen chapters dealing with what is understood by cryptorchidism, pathological changes, tumours, etc., in cryptorchids, possibility of breeding, procedure of castration, technique of the operation, after treatment, mishaps in the emasculation, casting methods, mortality, etc. The author considers that the condition is present in about 1 per cent. of colt foals. Normal cryptorchidism is present in all birds, reptiles, amphibia and fish, and further in elephants and whales. The testes usually descend in the fœtus at seven to nine months. Causes of non descent are too narrow abdominal ring, shortness of vessels and nerves of the testicle, rarely tumours, and very rarely adhesions. Heredity plays a part whether on the side of the stallion or mare.

The subject is cast by the Danish method and chloroformed, with a mask allowing free inspiration and expiration. The operation is carried out with the compression pincers (about 34 cm. long), and the cord cut through close up to the pincers with the emasculator (25 cm. long). Winter has used this method for the last twenty years, and is of opinion that it is the most humane, sure, and suitable method of operating. During the thirty years he has been performing this operation his mortality rate has never exceeded ½ to 1 per cent. He pays a tribute to Pasteur, Lister, James Simpson, and Morton for their preliminary work, which has enabled veterinary surgeons to carry out this operation.

Atlas der Anatomie des Pferdes. By Dr. R. SCHMALTZ. Teil II. Berlin. 1922.

This is the 3rd and 4th Editions of Part II (Topographical Myology) of Schmaltz's *Atlas of Equine Anatomy*. The 2nd Edition was out of print by the beginning of 1914, and as the author served in the war till 1917, when he was severely wounded, the revision of the work had necessarily to be postponed. The revision was begun in 1920, and Part I (Osteology) and Parts III and IV (Intestines and Head) will appear later.

The present volume consists of Plates 24 to 62, Plate 24 being the skeleton of the neck and trunk, forming the completion to the Osteology (Part I). Several of the plates are newly drawn, and additional enlarged drawings of special parts are introduced, notably the m.biceps in the sulcus intertubercularis in front of the articulatio humeri (lower arm right side, medial), the topography of the nervus medianus beneath the articulatio cubiti, and also the topography of the elbow-joint from in front. New plates have also been made for the foreleg (manus, carpus), front and back views. The nomenclature is given in Latin and German, and for the foot the new Latin terminology has been introduced, thus bringing this part into line with the author's *Anatomy of the Horse*, which may be used as the text for the *Atlas*.

The work is beautifully done, and the printing is clear and easily readable. The majority of the plates are provided with a transparent covering page bearing the names of the muscles, nerves, vessels, etc. Dr. Schmaltz, who is an Honorary Associate of the R.C.V.S., is to be congratulated on having produced an excellent work under very adverse circumstances.

The History, Control and Treatment of Infectious Abortion of Cattle in Southern Rhodesia.—By L. E. W. Bevan, M.R.C.V.S., Dept. of Agriculture, Salisbury, Rhodesia, *Bulletin* No. 431, October 1922.

The author reviews the history, control and treatment of infectious abortion from 1906 to the present time. The disease exists from one end of the country to the other, causing a shortage of calves and an increasing number of barren or sterile cows. The vaccine at first being used not proving satisfactory and the danger of using live vaccine being considerable, Bevan set out to try and overcome the difficulty. It had been shown that " at best vaccination suppresses losses due to abortion by continually keeping alive the infection " (Edwards, 1921); and again, " the only useful form of vaccination consists in inoculating animals with live bacilli," and these may be excreted in the milk or fæces. In 1915 Bevan carried out experiments with dead and live cultures to see their effect in producing agglutinins, and found that both sets of cultures produced agglutinins, but that the reaction produced by the dead organisms did not persist as long as with the live ones. Bevan for a time, therefore, issued dead vaccine, but this proving unsatisfactory, he sought for a product in which the organisms were devitalised, but their toxins remained intact. After many experiments it was decided to use chloroform for this purpose, which according to the researches of Duval and Harris in connection with Pfeiffers bacillus " devitalises the bacilli by rapidly absorbing the water, and in consequence increases the permeability, which results first in plasmolysis, then rupture of the bacterial cell, liberating without affecting in any manner its toxic moiety." [Besson in his *Practical Bacteriology, Microbiology and Serum Therapy* states that " Pfeiffers bacillus is very sensitive to heat and drying. Cultures killed with chloroform or heat are toxic."—*Reviewer.*]

After five years' experience with this devitalised vaccine in Rhodesia it has received the commendation of the veterinary profession in South Africa, and administrative measures are based upon its application. The veterinary surgeons and stockowners in whose herds the vaccine has been applied are satisfied and content to carry on with it until a better is available.

The author recognises that the claim for the vaccine is somewhat empirical, and that field experience alone supports it. Careful experiments under the strictest supervision are necessary to place it on a basis of scientific accuracy.

Personal

ROYAL ARMY VETERINARY CORPS WAR MEMORIAL

A MEMORIAL is being placed in St. George's (Garrison) Church, Woolwich, to perpetuate the memory of those Officers, Warrant Officers, Non-Commissioned Officers, and Men of the Royal Army Veterinary Corps, Regular and Territorial, who lost their lives during the Great War.

The unveiling ceremony is fixed to take place at 3 p.m. on Friday, June 22, 1923, at St. George's Church, Woolwich.

It is hoped that as many as possible of the past and present officers and other ranks of the Royal Army Veterinary Corps will attend.

The Director-General Army Veterinary Services, Officers Army Veterinary Services, and Royal Army Veterinary Corps will be " At Home " to all past officers of the Corps and their friends at the Church Hall, adjoining St. George's Church, after the ceremony.

It will be of great assistance if those who propose to attend inform the Hon. Secretary, R.A.V.C., Memorial Committee, R.A.V.C. Depot, Woolwich, as soon as possible, at the same time stating probable numbers accompanying them, when admission tickets to the church will be forwarded.

PARTICULARS OF TRAINS.

Train leaves Cannon Street at 1.45 p.m., arriving at Woolwich Arsenal at 2.10 p.m.

An orderly of the Royal Army Veterinary Corps will be at the Arsenal station to direct visitors.

Frequent trams run to and from Woolwich Arsenal station and St. George's Church.

Return journey. Train leaves Woolwich Arsenal at 5.24 p.m., arriving at Cannon Street at 5.52 p.m.

R.A.V.C. ANNUAL DINNER

THE annual dinner of the officers of the Royal Army Veterinary Corps will be held at the Hotel Cecil on Friday, June 22, 1923, at 8 p.m. Officers of the Militia, Territorial Army and Temporary Officers who served in the war are eligible to attend. Subscriptions: Subscribers, £1; non-subscribers, £1 12s. 6d. Will gentlemen desirous of attending kindly inform the Hon. Secretary, R.A.V.C. Dinner, Imperial House, Tothill Street, S.W. 1.